

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
	:	Examiner: R. E. Sellers
Eadaoin Ledwidge)	
	:	Group Art Unit: 1712
Application No.: 10/661,637)	
	:	Confirmation No.: 8008
Filing Date: September 15, 2003)	
	:	
For: CURABLE COMPOSITIONS)	April 13, 2006

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO ELECTION REQUIREMENT

Sir:

This is in response to the Office Action mailed March 13, 2006, in which an election of species requirement has been advanced.

A listing of the claims appears on page 2 hereof.

Remarks begin on page 10 hereof.

LISTING OF THE CLAIMS:

A listing of the claims is presented below.

1. (Original) A curable composition comprising:

(i) a uv curable component;

(ii) a component for initiating cure of the uv curable component;

(iii) an opacifying component which has a first colour which is sufficiently transparent to uv light so as to substantially unaffected cure of the uv curable component and which is activatable to change colour to a second colour which is sufficiently opaque to render the cured product of the composition substantially opaque to visible light; and

(iv) an adhesion-promoting component.

2. (Original) A composition according to Claim 1, wherein the composition is capable of curing through a volume of at least about 1 mm.

3. (Previously Presented) A composition according to Claim 1, wherein the composition is capable of curing radiation at a wavelength of at least 290 nm.

4. (Previously Presented) A composition according to Claim 1 further comprising an inorganic filler component.

5. (Previously Presented) A composition according to Claim 1, wherein the composition is capable of curing in a time of less than about 15 seconds.

6. (Previously Presented) A composition according to Claim 1 wherein the uv curable component comprises an epoxy resin material.

7. (Original) A composition according to Claim 6, wherein the epoxy resin component is a member selected from the group consisting of cycloaliphatic epoxy resins; C₄-C₂₈ alkyl glycidyl ethers; C₂-C₂₈ alkyl- and alkenyl-glycidyl esters; C₁-C₂₈ alkyl-, mono- and poly-phenol glycidyl ethers; polyglycidyl ethers of pyrocatechol, resorcinol, hydroquinone, 4,4'-dihydroxydiphenyl methane, 4,4'-dihydroxy-3,3'-dimethyldiphenyl methane, 4,4'-dihydroxydiphenyl dimethyl methane, 4,4'-dihydroxydiphenyl methyl methane, 4,4'-dihydroxydiphenyl cyclohexane, 4,4'-dihydroxy-3,3'-dimethyldiphenyl propane, 4,4'-dihydroxydiphenyl sulfone, and tris(4-hydroxyphenyl)methane;

polyglycidyl ethers of the chlorination and bromination products of the above-mentioned diphenols; polyglycidyl ethers of novolacs; polyglycidyl ethers of diphenols obtained by esterifying ethers of diphenols obtained by esterifying salts of an aromatic hydrocarboxylic acid with a dihaloalkane or dihalogen dialkyl ether; polyglycidyl ethers of polyphenols obtained by condensing phenols and long-chain halogen paraffins containing at least two halogen atoms; phenol novolac epoxy resins; cresol novolac epoxy resins; and combinations thereof.

8. (Previously Presented) A composition according to Claim 6 wherein the epoxy resin component is a cycloaliphatic epoxy resin, bisphenol A epoxy resin, bisphenol F epoxy resin and combinations thereof.

9. (Previously Presented) A composition according to any one of Claim 6, wherein the epoxy resin component is used in an amount of up to about 98 percent by weight of the total composition.

10. (Previously Presented) A composition according to Claim 1 wherein the opacifying component comprises a lactone in which an aromatic ring is fused to the lactone ring.

11. (Previously Presented) A composition according to Claim 1 wherein the component for initiating cure of the curable component also participates in the colour change of the opacifying component.

12. (Previously Presented) A composition according to Claim 1 wherein the component for initiating cure of the curable component is an onium salt.

13. (Previously Presented) A composition according to Claim 1 wherein the adhesion promoting component comprises silane.

14. (Original) A composition according to Claim 13 wherein the silane is selected from the group consisting of: cycloaliphatic silanes, epoxy silanes, and amino silanes and combinations thereof.

15. (Previously Presented) A composition according to Claim 1 wherein the composition further comprises a photosensitiser component.

16. (Original) A composition according to Claim 15, wherein the photosensitiser component is selected from the group consisting of thioxanthenes, anthracene, perylene, phenothazine, 1,2 benzanthracene, coronene, pyrene, tetracene and combinations thereof.

17. (Previously Presented) A composition according to Claim 15, wherein the photosensitiser is a thioxanthone.

18. (Previously Presented) A composition according to Claim 15, wherein the photosensitiser is used in an amount within the range of about 0.01 to 1 percent by weight of the total composition.

19. (Previously Presented) A composition according to Claim 1, wherein component for initiating cure of the uv curable component is present in an amount within the range of about 0.1 to about 2 percent by weight of the total composition.

20. (Previously Presented) A composition according to Claim 1, further comprising a dye or pigment.

21. (Withdrawn) A smart card module assembly, comprising:

- a carrier substrate dimensioned to receive a die;
- a die having two surfaces, a first of which having bond pads disposed thereon and a second of which dimensioned for placement on the carrier substrate, wherein the second surface of the die is disposed on the carrier substrate so that the bond pads on the first surface of the die are in a position relative to the bond pads on the carrier substrate to make electrical connection therewith by way of the wire connectors;
- a plurality of bond pads, some of which being positioned on one surface of the die and others of which being positioned on the carrier substrate;
- a plurality of wire connectors; and
- a composition according to any preceding claim, wherein the second surface of the die is disposed on the carrier substrate so that the bond pads on the first surface of the die

are in a position relative to the bond pads on the carrier substrate to make electrical connection therewith by way of the wire connectors, and wherein the composition is disposed over at least a portion of the smart card module assembly so as to cover the wire bond connections established.

22. (Withdrawn) A smart card comprising:

a plastic card; and

a smart card module assembly of Claim 21 having been exposed to radiation in the electromagnetic radiation at a wavelength of at least 290 nm, encased in the plastic card.

23. (Withdrawn) A method for the attachment of an integrated circuit to a carrier substrate, the steps of which include

applying a composition according to Claim 1 to the carrier substrate;

activating the composition prior to or after application thereof through exposure to radiation in the electromagnetic spectrum; and

positioning the integrated circuit onto the circuit board and establishing electrical interconnection therebetween; and

optionally, curing the composition at a temperature between 60 and 140°C.

24. (Cancelled).

25. (Previously Presented) Use of a composition according to Claim 1 as an encapsulant for encapsulating electronic components.

REMARKS

Claims 1-23 and 25 are pending, and now subject to an election of species requirement.

An election of species requirement has been advanced as set forth at pages 2-4 of the Action. That election is from among the following seven patentably distinct species:

I. The UV curable components such as the cycloaliphatic epoxy resin, UVR 61228 shown in Example 1 on page 18, line 4.

II. The cure-initiating components such as the iodonium salts selected from UVACURE 1600, RHODASIL 2074 or IRGACURE 250 disclosed on page 10, lines 28-29.

III. The opacifying components such as those chosen from page 11, line 10 to page 12, line 10.

IV. The adhesion-promoting components such as SILQUEST 187.

V. The presence or absence of the inorganic filler of Claim 4, where if its presence is elected, a particular species thereof.

VI. The presence or absence of the photosensitizer of Claim 15, where if its presence is elected, a particular species thereof.

VII. The presence or absence of the dye or pigment of claim 20, where if its presence is elected, a particular species thereof.

For searching purposes only, Applicant elects

I. the cycloaliphatic epoxy resin, UVR 61228;

II. iodonium salt;

III. pre-oligomerized DER (CAT 002, UCB);

IV. SILQUEST 187;

V. with inorganic filler, the inorganic filler being fumed silica;

VI. with photosensitizer, the photosensitizer being isopropyl thioxanthone;

VII. with dye or pigment, the dye or pigment being Blue 50.

Having made the above election, Applicant respectfully requests a prompt and favorable examination of the subject application.

Applicant will address the Examiner's comments in paragraphs 2 and 3 of the Action, in response to the first Action on the merits.

Application No. 10/661,637
Office Action of March 13, 2006
Response to Election Requirement dated April 13, 2006

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Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Steven C. Bauman', written over a horizontal line.

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